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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/606,529	06/26/2003	Su Il Choi	5895P038	5763

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BLAKELY SOKOLOFF TAYLOR & ZAFMAN
12400 WILSHIRE BOULEVARD
SEVENTH FLOOR
LOS ANGELES, CA 90025-1030

EXAMINER

AZEMAR, GUERSSY

ART UNIT PAPER NUMBER

2613

DATE MAILED: 08/02/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/606,529	Applicant(s) CHOI ET AL.	
	Examiner Guerssy Azemar	Art Unit 2613	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 June 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 June 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>06/26/2003</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Specification

1. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

The abstract of the application exceeds the maximum number of words required.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1 – 3 are rejected under 35 U.S.C. 102(b) as being anticipated by Abdelhamid et al. (6,023,467).

(1) with respect to claim 1:

Abdelhamid et al. discloses a allocation device for an Ethernet Passive Optical Network including an optical line termination (OLT) (column 4, line 21), an optical distribution network (ODN) (column 7, line 43), and a plurality of optical network units

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(ONU) (column 4, line 23), wherein the optical line termination includes a Multi-Point Control Protocol (MPCP) allocator (see figure 3, column 9, line 35), and the optical network unit includes an MPCP requester (112 in figure 4, column 11, line 53), said MPCP allocator including (column 2, lines 38 - 45):

a class-based queue state counter which differentiates the optical network unit, upon receipt of a control message for upstream report (REPORT) from a Medium Access Control (MAC) control layer, and obtains class-based queue length information of the optical network unit (column 9, lines 30 - 37).

and a grant generator which, when queue state information of all the optical network units is obtained through the class-based queue state counter, generates a service-based bandwidth for each of the optical network units, and transmits a control message for upstream bandwidth allocation (GATE) (98 in figure 3, column 9, line 36);

said MPCP requester including: a class-based buffer counter which counts a class-based buffer length, upon receipt of the control message for upstream bandwidth allocation from the grant generator; and a request generator which generates class-based buffer length information, and transmits the control message for upstream report containing the generated buffer length information (column 11, lines 45 - 55).

(2) with respect to claim 2:

Abdelhamid et al. discloses the bandwidth allocation, wherein the downstream control message as a grant of an upstream bandwidth request includes a grant level, a grant length, and a start time of a timeslot as a sum of a plurality of grant values of upstream slot bandwidth (column 11, lines 17, 18, 24 - 30).

(3) with respect to claim 3:

The bandwidth allocation, wherein the control message for upstream report includes a queue level, and a queue report as a sum of a plurality of queue state reports (column 11, lines 28 – 30, 35 – 40).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 4, 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Abdelhamid et al. (6,023,467) in view of Mazzola et al. (5,796,732).

(1) with respect to claim 4:

Abdelhamid et al. discloses a allocation device for an Ethernet Passive Optical Network including an optical line termination (OLT) (column 4, line 21), an optical distribution network (ODN) (column 7, line 43), and a plurality of optical network units (ONU) (column 4, line 23), the method comprising:

a first step of, upon receipt of a control message for upstream report from the optical network unit, checking which ONU's information is contained in the received control message, and updating a bandwidth (column 11, lines 25 - 27).

However, Abdelhamid et al. does not disclose the different priority levels as specified in steps 2- 7.

a second step of, when a sum of bandwidths for HP (High Priority) of all ONU's is more than a link capacity, allocating a bandwidth proportional to the bandwidth for HP of each of the ONU's to each of the ONU's in the same order as a previously allocated order of ONU's, if there is a previously allocated order of ONU's;

a third step of, when the sum of bandwidths for HP (High Priority) of all ONU's is less than the link capacity, allocating a bandwidth equal to the bandwidth for HP to each of the ONU's;

a fourth step of, when a sum of the bandwidths for HP and MP (Medium Priority) of all ONU's is more than the link capacity, using a bandwidth remaining after the allocation for the bandwidths for HP to additionally allocate a bandwidth proportional to the bandwidth for MP of each of the ONU's to each of the ONU's;

a fifth step of, when the sum of the bandwidths for HP and MP of all ONU's is less than the link capacity, using a bandwidth remaining after the allocation for the bandwidths for HP to additionally allocate a bandwidth equal to the bandwidth for MP of each of the ONU's to each of the ONU's;

a sixth step of, when a sum of maximum bandwidths of all ONU's is more than the link capacity, using a bandwidth remaining after the allocation for the bandwidths for HP and MP to additionally allocate a bandwidth proportional to the bandwidth for LP (Low Priority) of each of the ONU's to each of the ONU's;

a seventh step of, when the sum of the maximum bandwidths is less than the link capacity, allocating an additional bandwidth to each of the ONU's so that a total bandwidth allocated to each of the ONU's is equal to the maximum bandwidth of each

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of the ONU's, and equally dividing a bandwidth remaining after the bandwidth allocation for the maximum bandwidth to be additionally allocated as a bandwidth for LP to each of the ONU's.

Mazzola et al. discloses a second step of, when a sum of bandwidths for HP (High Priority) of all ONU's is more than a link capacity, allocating a bandwidth proportional to the bandwidth for HP of each of the ONU's to each of the ONU's in the same order as a previously allocated order of ONU's, if there is a previously allocated order of ONU's (column 7, lines 58 – 67, column 8, lines 1, 17 – 33, 37 – 39, column 9, lines 66, 67, column 10, lines 1 - 5);

a third step of, when the sum of bandwidths for HP (High Priority) of all ONU's is less than the link capacity, allocating a bandwidth equal to the bandwidth for HP to each of the ONU's (column 7, lines 58 – 67, column 8, lines 1, 17 – 33, 37 – 39, column 9, lines 66, 67, column 10, lines 1 - 5);

a fourth step of, when a sum of the bandwidths for HP and MP (Medium Priority) of all ONU's is more than the link capacity, using a bandwidth remaining after the allocation for the bandwidths for HP to additionally allocate a bandwidth proportional to the bandwidth for MP of each of the ONU's to each of the ONU's (column 7, lines 58 – 67, column 8, lines 1, 17 – 33, 37 – 39, column 9, lines 66, 67, column 10, lines 1 - 5);

a fifth step of, when the sum of the bandwidths for HP and MP of all ONU's is less than the link capacity, using a bandwidth remaining after the allocation for the bandwidths for HP to additionally allocate a bandwidth equal to the bandwidth for MP of

each of the ONU's to each of the ONU's (column 7, lines 58 – 67, column 8, lines 1, 17 – 33, 37 – 39, column 9, lines 66, 67, column 10, lines 1 - 5);

a sixth step of, when a sum of maximum bandwidths of all ONU's is more than the link capacity, using a bandwidth remaining after the allocation for the bandwidths for HP and MP to additionally allocate a bandwidth proportional to the bandwidth for LP (Low Priority) of each of the ONU's to each of the ONU's (column 7, lines 58 – 67, column 8, lines 1, 17 – 33, 37 – 39, column 9, lines 66, 67, column 10, lines 1 - 5);

a seventh step of, when the sum of the maximum bandwidths is less than the link capacity, allocating an additional bandwidth to each of the ONU's so that a total bandwidth allocated to each of the ONU's is equal to the maximum bandwidth of each of the ONU's, and equally dividing a bandwidth remaining after the bandwidth allocation for the maximum bandwidth to be additionally allocated as a bandwidth for LP to each of the ONU's (column 7, lines 58 – 67, column 8, lines 1, 17 – 33, 37 – 39, column 9, lines 66, 67, column 10, lines 1 - 5);

Mazzola et al. does not specifically disclose the steps 2 – 7. However, one skilled in the art would believe that those steps are part of the "Round-Robin scheme" as taught by Mazzola et al. where different requests are granted based on their priority levels. The higher priority requests are granted first, then the medium priority levels, and so forth. Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use the Round-Robin scheme as taught by Mazzola et al. in the bandwidth allocation device of Abdelhamid et al. because it will have a significant

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impact on the overall performance of the device. In other words, it will be more reliable and faster.

(2) with respect to claim 5:

Abdelhamid et al. teaches the dynamic allocation method, wherein the first step is performed in such a manner that, when the control message for upstream report is received from the optical network unit, it is checked which ONU's information is contained in the received control message, which corresponds for queue length information (column 11, lines 24 - 30).

However, Abdelhamid et al. does not teach a request for HP, a request for MP, and a request for LP.

Mazzola et al. teaches a request for HP, a request for MP, and a request for LP (column 8, lines 18 -21).

Abdelhamid et al. checks the control message to find a specific ONU and other relevant information. It does so for every request that is made and would do so for Mazzola et al.'s requests for high priority, medium priority, and low priority request before granting them. Therefore it would have been obvious to one of ordinary skill in the art to use the priority levels as taught by Mazzola et al. in the bandwidth allocation device of Abdelhamid et al. because it will have a significant impact on the overall performance of the device. In other words, it will be more reliable and faster.

6. Claims 6, and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Abdelhamid et al. (6,023,467) and Mazzola et al. (5,796,732) as applied to claim 4 above, and further in view of Arimilli (6,275,502).

(1) with respect to claim 6:

Abdelhamid et al. and Mazzola et al. teach all of the subject matter as described above, except for the dynamic bandwidth allocation method, wherein the high priority service is a service having requirements of end-to-end delay and jitter of the services of the ONUs, the medium priority service is a service which is sensitive to the delay but requires a predetermined bandwidth, and the low priority service is a BETC (Best Effort Traffic Class) service which has no requirement of end-to-end delay and jitter, and is assigned a marginal bandwidth.

However, Arimilli teaches the dynamic bandwidth allocation method, wherein the high priority service is a service having requirements of end-to-end delay and jitter of the services of the ONU's (column 29, lines 27 – 30, 33 – 34, column 30, lines 15 - 17), the medium priority service is a service which is sensitive to the delay but requires a predetermined bandwidth (column 37, lines 35 - 38), and the low priority service is a BETC (Best Effort Traffic Class) service which has no requirement of end-to-end delay and jitter, and is assigned a marginal bandwidth (column 29, lines 32, 33, 35 - 37).

Abdelhamid et al. and Mazzola et al. do not explicitly define the three priority levels as claimed in the application. However it is well known in the art that the higher priority levels is usually assigned to delay sensitive data and the subsequent lower priority levels would have data that is less sensitive to delay or jitter. Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to define the priority levels as taught by Arimilli in the bandwidth allocation method taught

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by Abdelhamid et al. and Mazzola et al. because there would be more bandwidth available, which would increase quality and efficiency.

(2) with respect to claim 7:

Abdelhamid et al. and Mazzola et al. teach all of the subject matter as described above, except for a computer readable medium.

However Arimilli teaches a computer readable medium (column 10, lines 6, 7, column 11, lines 38 - 47).

It is desirable to have computer readable medium to compensate for the hardware, which it would otherwise require. Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use the codes as taught by Arimilli in the bandwidth allocation device of Abdelhamid et al. because the execution of the steps would be faster and would require less hardware.

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Guerssy Azemar whose telephone number is (571)270-1076. The examiner can normally be reached on Mon-Fri (every other Fridays off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Liu Shuwang can be reached on (571)272-3036. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Guerssy Azemar

07/12/2006



SHUWANG LIU
SUPERVISORY PATENT EXAMINER